SECTION 15195

NATURAL GAS PIPING SYSTEMS

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LANL MASTER CONSTRUCTION SPECIFICATION

When editing to suit project, author shall add job-specific requirements and delete only those portions that in no way apply to the activity (e.g., a component that does not apply). To seek a variance from applicable requirements, contact the discipline POC.

Coordinate this Specification with Civil Standard Drawing ST3211, and Mechanical Standard Drawings ST6500 and ST6510.

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PART I GENERAL

1.1 SECTION INCLUDES

A. Building gas piping systems

B. Site distribution gas piping systems

1.2 LANL FURNISHED AND INSTALLED EQUIPMENT

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Furnished and installed gas regulator stations are limited to stations identified in LANL Engineering Manual Mechanical Chapter, Drawings ST6500, Sheets 1-4.

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A. LANLs Support Services Subcontractor (SSS) will furnish, install, and adjust pressure of gas regulator station.

1.3 LANL PERFORMED WORK

A. LANLs SSS will tie into existing gas piping system.

1.4 SUBMITTALS

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Submittals shall be approved by LANL Utilities Group gas system representative.

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A. Submit the following in accordance with Section 01300:

1. Catalog data on pipe materials, pipe fittings, valves, pipe coating, and accessories.

2. Certification of welders and qualified welding procedure.

1.5 QUALITY ASSURANCE

A. Welders Certification and Qualified Procedure Standards

1. Exterior Steel Pipe: API Standard 1104

2. Interior Steel Pipe: Section IX of ASME Boiler and Pressure Vessel Code.

3. Plastic Pipe: 49 CFR 192.283 and 192.285, and Driscopipe heat fusion qualification guide.

PART 2 PRODUCTS

2.1 PRODUCT OPTIONS AND SUBSTITUTION

A. Refer to section 01630

2.2 POLYETHYLENE PIPING, BELOW GRADE

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Do not use polyethylene piping when design pressure exceeds gauge pressure of 100 psig (49 CFR 192.123). Provide 1 inch, 1-1/4 inch, 2 inch, or 3 inch PE service line.
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A. Manufacturer: Performance Pipe, Driscopipe 8100, no substitution.

B. Pipe: Polyethylene, high density, ASTM D2513, PE3408, SDR11 iron pipe size, cell classification number 345564C per ASTM D3350.

C. Fittings: Polyethylene, high density, butt heat fusion type, ASTM D3261, PE3408, SDR 11, cell classification number 345564C per ASTM D3350.

2.3 STEEL PIPING, BELOW GRADE

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Contact LANL Utilities Group gas system representative for approval to use steel piping below grade. Provide minimum 2 inch steel service line.
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A. Pipe: Standard wall, black steel, ASTM A53 or API 5L.

B. Fittings: Standard wall, black steel, butt-welding type, ASTM A 234, Grade WPB.

C. Coating: Factory applied thermoplastic resin, minimum 10 mil adhesive coating, minimum 60 mil plastic coating, per Federal Specification L-C-530C, or an approved equal by the LANL Utilities Group gas system representative.

2.4 STEEL PIPING, ABOVE GRADE

A. Pipe: Standard wall, black steel, ASTM A53. Welded for pipe sizes above 2 inches, threaded for pipe sizes 2 inches or less.

B. Fittings: Malleable iron, threaded type, ANSI B16.3, Class 150 or standard wall, black steel, butt welding type, ASTM A234, Grade WPB.

C. Flanges: Steel, weld neck, class 150, raised face, ANSI B16.5.

D. Gasket Material: Neoprene, durometer hardness 50-65.

2.5 PRESSURE REGULATOR STATION

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Regulator stations are limited to stations identified in the Mechanical Standard Drawings ST6500.
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A. LANLs Support Services Subcontractor will furnish, install, and adjust pressure of gas regulator station.

2.6 SHUT-OFF VALVE, ABOVE GRADE, THREADED ENDS

A. Manufacturer: Balon Series S42, no substitution.

B. Valve: Ductile iron body, threaded ends, non-lubricated ball valve, wrench operated, 1000 psig working pressure, size [1], [2] inch.

2.7 SHUT-OFF VALVE, ABOVE GRADE, FLANGED ENDS

A. Manufacturer: Balon Series F, no substitution.

B. Valve: Steel body, flanged ends, non-lubricated ball valve, wrench operated, Class 150, size [2], [3], [4], [6] inch.

2.8 SHUT-OFF VALVE, ABOVE AND BELOW GRADE, WELDED ENDS

A. Manufacturer: Balon Utility Seal, no substitution.

B. Valve: Steel body, butt welded ends, non-lubricated ball valve, wrench operated, 150 psig working pressure, size [2], [3], [4], [6] inch.

2.9 SHUT-OFF VALVE, BELOW GRADE, POLYETHYLENE

A. Manufacturer: Nordstrum Poly-Gas, no substitution.

B. Ball Valve for natural gas service, material PE 3408 Driscopipe 8100, SDR11 iron pipe size, 100 psig service pressure, butt fusion end connections, reduced bore for 1 and 1 1/4 inch valves, full bore for all other sizes.

1. Valve Size: [1], [1 1/4], [2], [3]

2.10 ANODELESS RISER

A. Manufacturer: R.W. Lyall (Lyco)

B. Prebent, for use with Driscopipe 8100 polyethylene piping, PE 3408, SDR11 iron pipe size, ends NPT by PE butt fusion, size to match piping system.

2.11 VALVE BOX

A. Manufacturer: Tyler, Series 6860

B. Valve Box: Cast iron, 5 1/4 inch shaft screw type, with lid marked gas, length to suit burial depth.

2.12 TEST PLUG (PETE's PLUG)

A. 1/4 inch NPT, brass body, neoprene core, rated for 1,000 psig, complete with sealing cap and gasket, to receive 1/8 inch O.D. probe.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION

A. Furnish and install piping in accordance with Uniform Plumbing Code, Uniform Mechanical Code, ASME Power Piping Code B31.1, and Code of Federal Regulations, 49 CFR 192, for gas pipe-line system.

B. Do not run gas piping below buildings or in crawl spaces.

C. Do not run gas piping under walks and equipment pads adjacent to building. If unavoidable, sleeve line.

D. Pressure test piping in accordance with Section 15992.

E. Label piping in accordance with Section 15190.

F. Paint outside gas regulator piping, valves, and appurtenances above ground to match building exterior. Refer to Section 09900.

G. Support piping in accordance with Section 15140.

3.2 POLYETHYLENE PIPING INSTALLATION

A. Lay piping on trench bottom in such a manner as to snake piping from one side of trench to the other with one cycle approximately every 40 feet. This will insure that sufficient piping material is available for expansion and contraction.

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Use steel pipe gas line if gas line is installed less than 20 feet of steam and condensate lines.
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B. Provide 20 feet minimum horizontal and vertical separation between underground steam and condensate piping and 3 feet minimum horizontal separation and 2 feet minimum vertical separation between all other underground utilities.

C. Perform butt heat-fusion joining in accordance with ASTM D2657 and manufacturer's written instructions. See PART 1, Quality Assurance.

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Refer to Mechanical Standard Drawings ST6510 for warning tape and Civil Standard Drawing ST3211 for trenching detail and tracer wire.
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D. Provide earth cover, bedding, warning tape, and tracer wire in accordance with trench detail, and below grade piping details.

E. Make plastic-to-steel connection with transition fitting that is butt fused on plastic end and welded on steel end.

3.3 STEEL PIPING INSTALLATION

A. Butt weld underground steel piping. See PART 1, Quality Assurance.

B. Use threaded joints for above grade piping 2 inches and smaller and butt-welded joints for piping above 2 inches.

C. Apply Polyken primer 1029 to underground joints, fittings, and valves, and spiral wrap with a double layer, half lapped, 35 mil tape, Polyken 930. Follow manufacturer's instructions.

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Refer to Mechanical Standard Drawings ST6510 for warning tape and Civil Standard Drawing ST3211 for trenching detail.
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D. Provide earth cover, bedding, and warning tape in accordance with trench detail, and below grade piping details.

E. Provide 3 feet minimum horizontal separation and 2 feet minimum vertical separation between underground utilities.

3.4 TIE-IN

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Refer to Mechanical Standard Drawings ST6510 for gas piping tie-in details.
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A. Tie-in to existing system shall be coordinated with and performed by LANLs Support Services Subcontractor. Excavation, backfill, and materials required for tie-in shall be provided by Contractor. Tie-in will be inspected by LANL Utilities Group gas system representative.

3.5 CORROSION CONTROL (STEEL PIPING BELOW GRADE)

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Contact Robert Keown, JCNNM Utilities at 665-5270, or Jerry Gonzales, at 665-2612 for cathodic protection requirements.

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END OF SECTION